



Food and Agriculture
Organization of the
United Nations

ISSN 1810-0708

Good beekeeping practices for sustainable apiculture

FAO ANIMAL PRODUCTION AND HEALTH / **GUIDELINES 25**



中国农业科学院
CHINESE ACADEMY OF AGRICULTURAL SCIENCES



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Published by:

The Food and Agriculture Organization of the United Nations

and

Istituto Zooprofilattico Sperimentale del Lazio e della Toscana M. Aleandri

and

Apimondia

and

Chinese Academy of Agricultural Sciences

Rome, 2021

Recommended Citation

FAO, IZSLT, Apimondia and CAAS. 2021. *Good beekeeping practices for sustainable apiculture*
FAO Animal Production and Health Guidelines No. 25. Rome. <https://doi.org/10.4060/cb5353en>

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ISBN 978-92-5-134612-9 (FAO)

ISBN 978-88-9463-310-8 (IZSLT)

ISBN 978-88-7643-103-6 (Apimondia)

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Chapter 20

Added value of bee products through post-harvest traceability

Food safety has become a growing concern, specifically among EU citizens over the last decades. Outbreaks of diseases in animals that could be transmitted to humans, and the presence of chemicals above acceptable limits in feed and food, can threaten both the quality and safety of products. This is why manufacturers guarantee the food safety of their products through the documentation of the prevention measures they apply.

At the same time, since the bee product market is highly exposed to fraudulent practices, operators can prove that their products are safe, nutritious, sustainable, authentic and not altered or modified through documentation on the origin, processing, composition and quality of their products.

Finally, all the data and information collected are essential to verify the results obtained and to adapt the production procedures in order to optimize resources.

Sustainability plays an increasing role in adding value to bee products, both as an individual ethical choice and as a marketing strategy. The materials and technologies used, the fuels and energy consumed and the waste produced are the main factors affecting the size of greenhouse gas emissions throughout the life cycle of beekeeping products, analysed through the lens of three aspects: emissions from hive management, process emissions and emissions from freight.

Post-harvesting steps identify the operations carried out on the products after they have been collected from the hives and separated from the bees. This phase is the part of the supply chain in which – in a way consistent with

the objectives of the production processes – the properties acquired from the raw materials in the hive are appropriately enhanced in the various product forms. As early as at the harvesting stage, bee products can have already acquired the qualitative characteristics required for consumption and trade. In these cases, the subsequent stages can also have a minimal impact on the characteristics and value of the finished products. In other cases, they are subjected to more complex processing aimed at determining the required quality characteristics, such as an adequate shelf life, capable of substantially changing the market value. Consequently, the related documentation can be more or less complex and extensive.

From a general point of view, post-harvesting record-keeping has two main purposes: i) to demonstrate to stakeholders, such as customers, consumers and authorities, compliance with the safety, integrity and authenticity requirements of the products, including any claims related to the sustainability of the applied production processes; ii) to allow the operator to carry out a post-production assessment regarding the achievement of the expected results and manage the continuous improvement of the quantity and quality of their products. The first purpose is more market-oriented, while the second can just be used internally, to manage products solely intended for family self-consumption.

Table 32, Table 330 and Table 34 cite data points that could be recorded both to communicate to the customer and implement traceability, providing added value to the final product.

BOX 12

European Regulations on food traceability

The General Food Law Regulation (Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002) sets out the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. For the purposes of the Regulation, "traceability" means the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution.

Moreover, article 18 of the same Regulation cites:

1. The traceability of food, feed, food-producing animals, and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.
2. Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed.
To this end, such operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand.
3. Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. This information shall be made available to the competent authorities on demand.
4. Food or feed which is placed on the market or is likely to be placed on the market in the Community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.
5. Provisions for the purpose of applying the requirements of this Article in respect of specific sectors may be adopted in accordance with the procedure laid down in Article 58(2).

More detailed traceability requirements in the context of the General Food Law Regulation are set out for specific sectors. Commission Implementing Regulation (EU) No 931/2011 is also particularly relevant for foods of animal origin – the category to which beekeeping products belong. The Regulation applies to food defined

as unprocessed and processed products in article 2(1) of Regulation (EC) No 852/2004. Article 3 of Commission Implementing Regulation (EU) No 931/2011 defines the traceability requirements that food business operators shall ensure and make available to whom the food is supplied and, upon request, to the competent authority.

These requirements are:

- an accurate description of the food
- the volume or quantity of the food
- the name and address of the food business operator from which the food has been dispatched
- the name and address of the consignor (owner) if different from the food business operator from which the food has been dispatched
- the name and address of the food business operator to whom the food is dispatched
- the name and address of the consignee (owner), if different from the food business operator to whom the food is dispatched
- a reference identifying the lot, batch or consignment, as appropriate
- the date of dispatch.

Article 9 of the Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers lists the mandatory particulars for labelling:

1. the name of the food
2. the list of ingredients
3. any ingredient or processing aid listed in Annex II or derived from a substance or product listed in Annex II causing allergies or intolerances used in the manufacture or preparation of a food and still present in the finished product, even if in an altered form
4. the quantity of certain ingredients or categories of ingredients
5. the net quantity of the food
6. the date of minimum durability or the 'use by' date
7. any special storage conditions and/or conditions of use
8. the name or business name and address of the food business operator referred to in Article 8(1)
9. the country of origin or place of provenance where provided for in Article 26
10. instructions for use where it would be difficult to make appropriate use of the food in the absence of such instructions
11. with respect to beverages containing more than 1.2% by volume of alcohol, the actual alcoholic strength by volume
12. a nutrition declaration.

TABLE 32
Data recorded on the product(s)

Data recorded on the product(s)	Safety and authenticity	Productivity	Sustainability
Product (honey, propolis, pollen, royal jelly, wax, venom, products thereof)	X	X	X
Product characteristics (physical, chemical, (physical, chemical, biological, nutritional, organoleptic, botanical, geographical, trademarks, voluntary and mandatory standards)	X	X	X
Identification of raw materials (type of raw material, beekeeper/producer, physical, chemical, biological, organoleptic, botanical; geographical characteristics; trademarks; voluntary and mandatory standards; lot or batch number)	X	X	X
Packaging identification (primary and secondary) (type, material, shape, volume, weight; lot or batch number)	X	X	X
Processing and packaging identification (lot number, date, shelf life)	X	X	
Product weight/volume (each product/lot/delivery)	X	X	X

TABLE 33
Data recorded on the producers

Data recorded on the product(s)	Safety and authenticity	Productivity	Sustainability
Beekeeper details (first name, last name, organization, street, zip code, city, country, contact data)	X		
Apiary address/geographic coordinates (to create a map)	X	X	X
Photos of the beekeeper, the apiary and the surrounding environment	X		
Post-harvesting food business operator (first name, last name, organization, street, zip code, city, country, contact data)	X		
Processing address geographic coordinates	X	X	X
Photos of the producer and/or processing procedures	X		
Details of producers of other food and non-food raw materials (first name, last name, organization, street, zip code, city, country, contact data)	X		
Processing plant address / geographic coordinates	X	X	X

TABLE 34
Data recorded on the processes

Data recorded on the processes	Safety and authenticity	Productivity	Sustainability
Processing objectives (product type, safety and authenticity objectives, productivity objectives and sustainability objectives)	X	X	X
Harvested products intended for processing (product type, beekeeper, apiary, packaging, means of transport, specifications, harvesting and delivery date)	X	X	X
Other food and non-food raw material intended for processing (product type, producer, packaging, means of transport, specifications, certifications, lot number, delivery date)	X	X	X
Characteristics of the raw materials at the time of delivery	X	X	
Processing date (start and end)	X	X	
Processing materials and technologies	X	X	X
Processing energy sources (type, quantity, cost)		X	X
Food safety and authenticity measures applied (GMP, HACCP, identification and traceability)	X	X	
Food sustainability measures applied (water, energy, waste management)		X	X
Waste produced (quantity and quality)		X	X
Identification of end products (product type, packaging, gross and net weight, processing date, lot number, storage place, other mandatory and voluntary specifications)	X	X	X
Commercial destination of finished products (Customer, address, product type, product weight, lot number, means of transport, delivery date)	X	X	X
Complaints (name and address of the complainant, nature of complaint, product details, action taken, product destination)	X	X	X
Process yield (raw material weights/volumes/cost, production cost, end product weights/volumes/revenues)	X	X	X